

Notice of Allowability

Application No.

10/724,238

Applicant(s)

LEE ET AL.

Examiner

MANSOUR M. SAID

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/724,238 ⁹⁻²⁸⁻⁰⁶
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

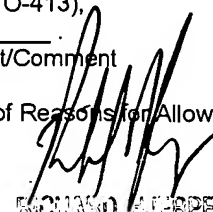
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
- ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

- ☐ Notice of Informal Patent Application
- ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
- ☐ Examiner's Amendment/Comment
- ☒ Examiner's Statement of Reasons for Allowance
- ☐ Other _____


RICHARD KIERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2300

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-12 are allowed.

The following is an examiner's statement of reasons for allowance: Claims 1-12 are allowed since certain key features of the claimed invention are not taught or fairly suggested by prior art. **In claim 1**, "a) comparing the input data with the comparison data and calculating a plurality of possible output data in consideration of an index error between the input data and error-diffused input data so that the false contours are removed, the error-diffused input data being obtained by diffusing a quantization error that has occurred in pixels adjacent to the input data in the current frame; b) detecting an index error between the input data and the error-diffused input data; and c) selecting one from among the plurality of possible output data obtained in a) in consideration of the index error detected in b); and d) sending the selected output data to a display driving unit of said digital display device to display the input data without false contours". **In claim 7**, "a quantization and output data unit which compares the input data with the comparison data and calculates a plurality of possible output data in consideration of an index error between the input data and error-diffused input data so that the false contours are removed, the error-diffused input data being obtained by diffusing a quantization error that has occurred in pixels adjacent to the input data in the current frame; an error detection unit which detects an index error between the input data and the error-diffused input data; and a multiplexing unit which selects one from among the plurality of possible output data obtained by the quantization and output data unit in consideration of the index error detected

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by the error detection unit, and which sends the selected output data to a display driving unit of said digital display device to display the input data without false contours". In claim 10, "a) diffusing a quantization error that has occurred in pixels adjacent to the input data in different scan lines of the current frame from a scan line that the input data belongs to; b) preparing a plurality of output data for compensating for possible false contours by comparing the input data with the comparison data; c) detecting a false contour error between the input data and error-diffused input data; d) selecting one from among the plurality of output data based on the detected false contour error; and e) sending the selected output data to a display driving unit of said digital display device to display the input data without false contours". The closest prior art Zhu et al. (6,097,368) teach a pulse number modulation (PNM) code that is used to display video images on a digital display device, and an equalization code set acting to reduce moving pixel distortion (MPD) in a displayed mages; Kawakawa et al. (6,661,469 B1) teach a gales contour correcting and removing a false contour in an mage based on a digital image signal and avoiding a side effect that cause by false contour correction where noises negatively effecting the display occur on a display device, however, singularly or in combination with other prior art, fail to anticipate or render the above underlined limitations obvious.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Daly (6,441,867 B1) teaches a bit-depth extension of digital displays using noise.

Tonami et al. (7,106,476 B1) teaches multi level quantizing a multi-tone image by error diffusion.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mansour M. Said whose telephone number is 571-272-7679. The examiner can normally be reached on Monday through Thursday from 8:30-6:00 P.M. The examiner can also be reached on alternate Friday from 8:30 a.m. to 5:00 p.m. EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hjerpe, Richard A. whose telephone number is 571-272-7691.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: 571-273-8300 (for Technology Center 2600 only)

Hand-delivered responses should be brought to the Customer Service Window at the

Randolph Building, 401, Dulany Street, Alexandria, VA 22314.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mansour M. Said

10/11/06



RICHARD HJERPE
SUPERVISOR, PATENT EXAMINER
TECHNICAL STAFF, 1000